

REMARKS

I. GENERAL

Claims 1-39 stand rejected under 35 U.S.C. § 112, ¶ 2, as being indefinite for failing to particularly point out and distinctly claim what applicants regard as the invention. Claims 1-19, 30-35 and 37-39 stand rejected as obvious over U.S. Patent No. 4,837,682 to Culler (hereinafter "the Culler patent") in view of U.S. Patent No. 5,168,547 to Miller et al (hereinafter "the Miller patent"). The Examiner has not asserted a prior art rejection of claims 20-29, or 36.

II. THE 35 U.S.C. § 112, ¶ 2 REJECTIONS

In response to the Examiner's comments, applicants have amended claims 1, 30, and 33 in order to more particularly point out and distinctly claim what applicants regard as their invention. In light of these amendments, applicants respectfully submit that the Examiner's rejection is traversed and should be withdrawn. Since claims 2-29, 31-32, and 34-39 were rejected based upon their dependence from claims 1, 30, and 33, respectively, withdrawal of the Examiner's rejection of these claims is also respectfully requested.

III. THE 35 U.S.C. § 103 REJECTIONS

After carefully reviewing the Examiner's contentions in the pending Office Action, applicants respectfully submit that the Culler and Miller patents are

insufficient to render any of claims 1-19, 30-35 and 37-39 obvious.

The Examiner states the following in support of his obviousness rejection as applied to claim 1:

"As per claim 1, Culler teaches the claimed:

'a plurality of bus elements': Culler's plurality of bus elements (See Fig. 6, elements 508, 544, 548, 522 and 528);

'a central unit having a plurality of bus inputs and an output': Culler's central unit having a plurality of bus inputs and at least one output (See Fig. 5, element 600); and

'arbitration logic granting the bus elements through the central unit': Culler's arbitration logic granting access to bus elements (See col. 8, lines 36-42).

"The difference between the instant claim and the reference of Culler is that the reference does not explicitly show the limitations of . . . 'a first plurality of uni-directional point-to-point buses ... and a second plurality of uni-directional point to point buses ...' (lines 6-11).

Independent claims 30 and 33 have been rejected on the same grounds as claim 1.

Applicants believe that the Examiner's rejection of the claims stems from a misapplication of the prior art of record to the present invention.

As set forth in the specification, conventional bus systems utilize multi-drop buses.¹ In accordance with such systems, a plurality of bus elements are coupled to a single bus and an arbitration method is used to determine

¹ See Application, p. 1, lines 11-16.

which bus element has control of the bus at a particular time. One problem with such systems is that all the bus elements are always coupled to the bus.

As stated on page 2, line 27 et al. of the application:

[t]he high speed bus system of the present invention provides much of the functionality familiar from conventional multi-drop buses, such as common visibility of each transaction by all CPU's, but with the speed and signal quality advantages of unidirectional point-to-point buses.

The Culler patent describes a multi-drop bus system. As stated in the "Summary of the Invention" of the Culler patent, "[a] system bus interconnects the processor units and local memories in parallel to the local bus."² Therefore, the Culler patent is precisely the type of multi-drop prior art system which the present invention was designed to improve upon.

In accordance with the present invention, a control unit has a plurality of inputs and a plurality of outputs. Each bus element has a first unidirectional bus coupled to one of the plurality of inputs and a second unidirectional bus coupled to one of the plurality of outputs. The control unit operates to couple the first unidirectional bus from one of the bus elements to the second unidirectional bus of another of the plurality of bus elements. Thus, in accordance with the present invention, only the bus elements which are involved in the transaction are coupled to the bus.

² Culler patent, col. 1, lies 57-59.

When evaluating a claim under Section 103, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific teachings may be ignored. See Application of Lunsford, 357 F.2d 385, 389-90 (CCPA 1966). Thus, any reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. Ashland Oil, Inc. v. Delta Resins & Refractories, 776 f.2d 281, 296 (Fed. Cir. 1985).

In order for a claim to be obviousness over a combination of prior art references, the prior art must not only disclose each element of the claim, but must provide "some teaching, suggestion, or incentive to make the combination made by the inventor." Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed.Cir.), cert. denied 111 S.Ct. 296 (1990). See In re Bond, 910 F.2d 831, 834 (Fed.Cir. 1990).

As demonstrated above, the Culler patent relates to a multi-drop bus system. Thus, it at least fails to show or suggest a first or second plurality of unidirectional buses as recited in elements (c) and (d) of claim 1. Moreover, since Culler provides a multi-drop system, it does not show a central unit which provides "point-to-point coupling of a particular one of the plurality of bus elements with the at least one other bus element" as recited in element (b) of claim 1. Therefore, unless the Examiner's secondary reference, the Miller

patent, discloses the first and second plurality of unidirectional buses, and a central unit, configured as claimed in claim 1, and suggests combining these features with the features of the Culler patent to create the present invention as claimed, the Examiner's rejection should be withdrawn.

In order to cure the deficiencies of the Culler patent, the Examiner simply asserts that the Miller patent shows unidirectional buses and that it would be obvious to combine Miller and Culler to improve efficiency.

Applicants do not contend that the concept of a unidirectional bus is novel. Rather, applicants contend that the use of a first and second unidirectional bus in combination with a central unit and arbitration logic, configured as claimed, is unobvious over the prior art.

The Examiner does not assert that the Miller patent shows or suggests a central unit, arbitration logic, and a first and second plurality of unidirectional buses configured as claimed. Instead, the Examiner merely asserts that it would be "obvious" to use the unidirectional buses of Miller in the system of Culler without pointing to any language in either patent which would lead one of ordinary skill in the art, without the benefit of applicants disclosure, to combine these references to create the present invention.

Applicants respectfully submit that when the Culler and Miller patents are objectively viewed, both for what they do and do not teach, it is clear that one of

ordinary skill in the art at the time of applicants invention would not find it obvious to combine these references to create a device which provides the familiar functionality of a multi-drop bus system while eliminating the inherent disadvantages of such a system by utilizing point-to-point connections between bus elements as recited in claim 1. Withdrawal of the Examiner's rejection of claim 1 is therefore respectfully requested.

Claim 30 similarly recites a central unit, arbitration logic, a plurality of first and second unidirectional point to point buses, and a first and second unidirectional memory buses. Claim 33 is a method claim which recites a plurality of first and second unidirectional buses, a central unit, and arbitration means. As a result, the remarks made above with regard to claim 1 apply with equal force to claims 30 and 33 and withdrawal of the Examiner's rejection of claims 30 and 33 is also respectfully requested.

Claims 2-29, 31-32, and 33-39 depend from and incorporate the limitations of claims 1, 30, and 33 respectively. Withdrawal of the Examiner's rejection of claims 2-19, 31-32, and 33-35, 37-39 is therefore respectfully requested.

IV. CONCLUSION

The present invention is new, non-obvious, and useful. Reconsideration and allowance of claims 1-39 is requested.

Respectfully submitted,


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